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ILLINOIS STATE GEOLOGICAL SURVEY



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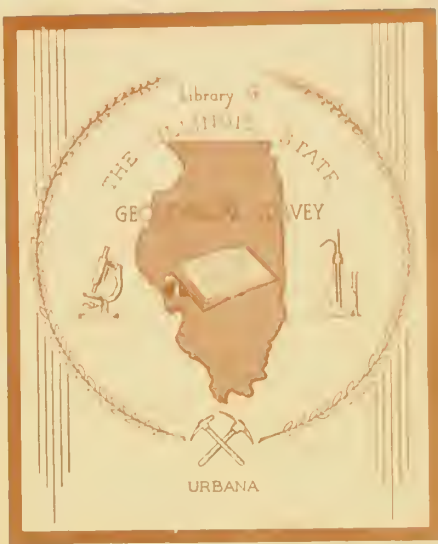
DATA FROM CONTROLLED DRILLING  
PROGRAM IN DU PAGE, KANE, AND  
KENDALL COUNTIES, ILLINOIS

*Compiled by Philip C. Reed*

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ILLINOIS STATE GEOLOGICAL SURVEY

*JOHN C. FRYE, Chief* • *Urbana 61801*



DATA FROM CONTROLLED DRILLING PROGRAM IN DU PAGE,  
KANE, AND KENDALL COUNTIES, ILLINOIS

*Compiled by Philip C. Reed*

INTRODUCTION

To facilitate the search for new shallow sources of ground water for the rapidly expanding metropolitan areas of northeastern and north-central Illinois, the Illinois State Geological Survey and the State Water Survey have drilled tests in three counties. Fourteen holes were drilled at eight sites in Du Page County, three sites in Kane, and two in Kendall (fig. 1). Data from field and laboratory analyses of samples collected from the holes are presented here.

Only shallow ground-water sources—the glacial deposits and the underlying limestone bedrock—are being evaluated, because they are believed to be capable of yielding more ground water than they are at present producing. The deep sources of water, the artesian sandstones, are already being overpumped in the Chicago region.

The Geological Survey's role in the investigation is to obtain, by controlled drilling, sampling, and testing, detailed and precise information on the glacial deposits in areas that are promising for ground water and generally have been only sparsely drilled. The Water Survey will make quantitative appraisals of the water-yielding potential of both the glacial deposits and the shallow bedrock at selected sites. Subsequent reports in this series will present geologic interpretations as well as data from the Geological Survey's investigation. The results of a controlled drilling program conducted in 1963 were reported in earlier Environmental Geology Notes.

Data from the investigation apply to environmental problems in the region other than the availability of ground water. The investigation

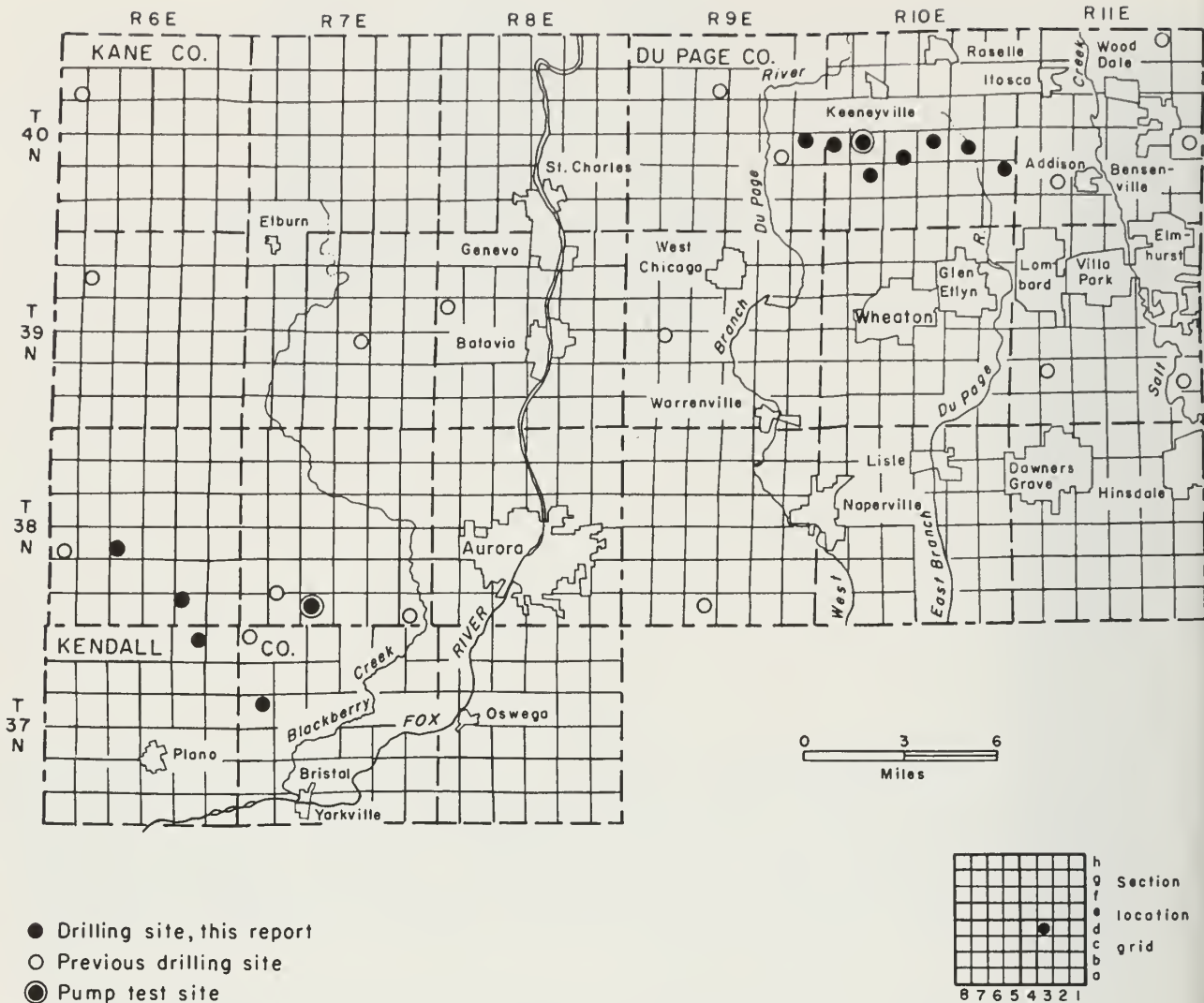


Fig. 1 - Location of drilling sites in Du Page, Kane, and Kendall Counties. Previous drilling sites were tested during the controlled drilling program of 1963 and data were reported in Environmental Geology Notes 1, 2, 6, 7, 9, and 10.

(1) supplements or verifies existing information on the nature and distribution of geologic materials that may be usable mineral resources, that may present construction problems, or that may affect the disposal of wastes; (2) provides a basis for interpreting other types of subsurface information, such as drillers logs of water wells or records of foundation borings; and (3) provides representative, relatively undisturbed split-spoon samples of earth materials that can be used to determine the physical and chemical properties that commonly affect land use.

The exploratory holes were drilled by Layne-Western Company of Aurora, Illinois, under supervision of the Geological Survey. At two sites, one in Du Page County and one in Kane County, the State Water Survey conducted pumping tests.



Locations for the test holes selected by the Geological Survey were generally along the right-of-way of county roads. Landowners and utility companies were consulted about buried tiles, cables, and pipelines in the area. County and township road supervisors, county zoning and planning officials, and county health officers were apprised of the scope, progress, and results of the testing.

## FIELD OPERATIONS

### Drilling

The drilling contractor was provided with a log of the anticipated thickness and character of the deposits extending to bedrock, instructions on testing procedures, and a schedule of depths to be sampled with the split-spoon sampler. Two mobile hydraulic rotary drill rigs (a Sanderson-Cyclone 600 and a Franks 45H2) were used for the drilling. The crew at the rig normally comprised a driller, driller's helper, a sampler, and a Survey geologist. During drilling, conventional rotary samples were obtained, split-spoon samples were taken at selected intervals, blow counts required to drive the split-spoon sampler were recorded, and a log of the materials penetrated was kept.

Interconnected settling and suction pits of about equal size were used during most of the program to keep the drilling fluid at optimum viscosity and weight. The dimensions of the suction pit and the mud loss were recorded for each boring. Natural mud alone was used on a few test holes, but more commonly bentonite and, periodically, caustic soda were added to improve the mud properties. Density and viscosity of the drilling fluid were determined with a standard mud balance and a Marsh funnel viscosimeter.

### Electric Logging

Spontaneous potential (SP) and single-point resistivity logs were run in mud-filled bore holes with the contractor's Widco logger (Model XMUA-12, type PRD) or a Neltronic logger (1K Model D) on loan to the Geological Survey from Northern Illinois Gas Corporation. The logs were useful in the interpretation of the lithologic character, sequence, and thickness of the glacial deposits sampled and tested in the program.

SP logs commonly distinguish sand (deflection to left, or negative) from clay (deflection to right), although the SP log is generally featureless where there is little contrast between the drilling fluid and the water in the formation. On resistivity (R) logs, sand and gravel are shown by their high resistivity (deflection to right) and clay and till by low resistivity. In addition, resistivity logs accurately define the contacts between adjacent beds.

The SP and resistivity logs provided generally good definitions of the clay till and sand and gravel deposits. The logs also provided a graphic representation that gives a more comprehensive picture than a series of sample descriptions.

TABLE 1—SIEVE DIMENSIONS AND GRADE SCALES

Sieve number		Tyler mesh diameter		Wentworth grain-size classification	Phi ( $\phi$ ) scale
U. S. Standard	Tyler	(in.)	(mm)		
4	4	0.185	4.699	Granules and pebbles (gravel) -----2.0 mm-----	-2.0
10	9	0.078	1.981	Very coarse sand -----1.0 mm-----	0.0
18	16	0.0390	0.991	Coarse sand -----0.5 mm-----	1.0
25	24	0.0276	0.701		
35	32	0.0195	0.495	Medium sand -----0.25 mm-----	2.0
45	42	0.0138	0.351		
60	60	0.0097	0.246	Fine sand -----0.125 mm-----	3.0
80	80	0.0069	0.175		
120	115	0.0049	0.124	Very fine sand -----0.0625 mm-----	4.0
170	170	0.0035	0.088		
230	250	0.0024	0.061	Silt -----0.0039 mm-----	8.0
		Hydrometer separation		Clay	

Samples

At four sites, representative samples were obtained by using a split-spoon sampler that had an outside diameter (OD) of 2 inches. The split spoon was lowered inside a full hole drill pipe  $4\frac{1}{2}$  inches in diameter on AW rod or directly into the borehole on 2  $\frac{3}{8}$ -inch API IF (internal flush) drill rod. The spoon was then driven 18 inches by a 140-pound hammer that had a free fall of 30 inches ASTM D 1586-67 or by a 300-pound stem and jar that fell 27 inches. At one site, measurements of cohesive materials with unconfined compressive strength were made with a Soiltest Model CL-700 pocket penetrometer immediately after the sample was obtained. A small portion of each cohesive sample was sealed in a bottle for determination of natural moisture content. Portions of the split-spoon samples and rotary cuttings, collected every 5 feet, are on file at the Geological Survey.

OTHER TESTS AND OPERATIONS

Size-Distribution Analyses

Hydrometer analyses were used to determine the amount of clay (particle diameter less than 0.004 mm) in each cohesive split-spoon sample.

Samples of approximately 55 grams were taken, and corrections for temperature and added deflocculants were made. The amount of material coarser than silt (diameter greater than 0.0625 mm) was determined by sieving, and the amount of silt was determined by subtracting from the weight of the total sample the weight of the coarser material plus the weight of the clay.

The rotary cuttings and the split-spoon samples that were friable or noncohesive were sieved only. The dimensions of the sieves and the Wentworth and phi ( $\phi$ ) grain-size classifications related to this study are shown in table 1.

### Descriptions of Materials

Descriptions of materials and the genetic classification given in the drilling records were made in the field by the driller and sampler and are not necessarily consistent with the laboratory data. Stratigraphic interpretations of the borings are being made and will be reported subsequently.

### IDENTIFICATION SYSTEM

The numbering system used to identify the borings is based on the location of the boring. The number of each hole consists of a county abbreviation, township, range, section, and coordinates within the section. Sections are divided into rows of one-eighth of a mile squares. Each square contains 10 acres and corresponds to a quarter of a quarter of a quarter section. A normal section of one square mile contains eight rows of one-eighth mile squares, and, of course, an odd-sized section contains more or fewer rows. Rows are numbered from east to west and lettered from south to north as shown in the grid on figure 1. For example, a well located in square 3d of Section 23, Township 40 North, Range 10 East, would be numbered DUP 40N10E-23.3d. Where there is more than one boring in a 10-acre square, the borings are identified by arabic numbers following the lower case letter in the boring number—for example, DUP 40N10E-23.3d2.

Location maps for each of the 21 borings are drawn on the scale of 1:62,500 (approximately 1 inch per mile), the same scale as the United States Geological Survey 15-minute quadrangle topographic maps. The borings have been located within the 10-acre coordinate squares with as much accuracy as the scales permit, according to footage locations made by the field geologist.

The quadrangle topographic map on which the boring is located is identified on the location map. Individual quadrangle maps may be purchased from the Illinois State Geological Survey, Urbana, or from the United States Geological Survey, Washington, D. C., for 50 cents each until September 1, 1972, after which the price will be 75 cents.








### EXPLANATION OF NOTES ON DRILLING RECORDS

The abbreviations, symbols, and graphic key for lithology on the drilling records included in this report are shown following.

- Blows/6-in. = number of blows required to drive the split-spoon hammer drop sampler 6 inches. Weight of hammer and/or length of drop for various depth intervals are indicated on the log heading.
- 81 (2-in.) = number of blows (e.g., 81) required to drive a split-spoon sampler a certain number of inches (e.g., 2).
- N value = number of blows required to drive the split-spoon sampler through the last foot of penetration.
- Recovery (in.) = length in inches of the sample retained in the sampler.
- Qp = unconfined compressive strength measurement made with pocket penetrometer, expressed in tons per square foot (TSF).

SYMBOLS USED IN GRAPHIC COLUMNS

Symbols used to denote the lithology of the various units of earth materials encountered in the drilling are given below.

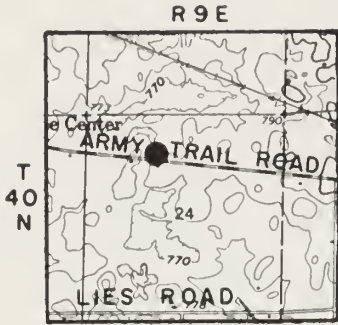
- |                                                                                                          |                                                                                              |                                                                                                  |
|----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
|  Till                  |  Shale     |  Silt and clay |
|  Gravel               |  Dolomite |  Sand         |
|  Peat or organic zone |                                                                                              |                                                                                                  |

The relations between descriptive terms and quantitative expressions for relative density and relative consistency are as follows:

Relative density		Relative consistency	
Description	Blows/ft	Description	Qp in TSF
Very loose .....	0 - 5	Very soft .....	0.0 - 0.25
Loose .....	5 - 10	Soft .....	0.25 - 0.5
Medium dense .....	10 - 30	Medium .....	0.5 - 1.0
Dense .....	30 - 50	Stiff .....	1.0 - 2.0
Very dense .....	50+	Very stiff .....	2.0 - 4.0
		Hard .....	4.0+

DATA FROM THE DRILL HOLES

DRILLING RECORD FOR DUP 40N9E-24.6g



Location of test:

N 4150 ft, W 3500 ft from SE cor. of sec. 24,  
 38 ft N of the center line of Army Trail Road,  
 530 ft E of a frame house, Wheaton Quadrangle,  
 1954

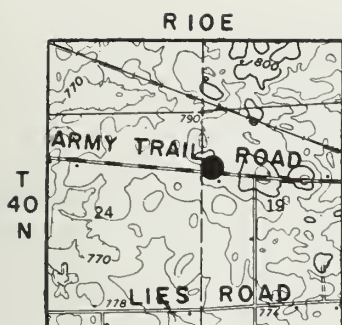
Surface elevation: 775 ft (West  
 Chicago Quadrangle, 1962)  
 Date started: 8-16-70  
 Date completed: 8-17-70

Drilling method: Hydraulic rotary  
 Pit size: 12.0 by 2.5 ft  
 Drill fluid loss: None

DESCRIPTION OF MATERIALS

Description	Thickness (ft)	Depth (ft)
Topsoil, black . . . . .	1.0	0.0 - 1.0
Till-clay, brown, gravelly . . . . .	5.0	1.0 - 6.0
Till-clay, brown, sandy, gravelly . . . . .	2.0	6.0 - 8.0
Clay, gray, soft . . . . .	3.0	8.0 - 11.0
Till-clay, gray, very gravelly . . . . .	5.0	11.0 - 16.0
Till-clay, gray, sandy; fine to medium gravel; boulder at 27 ft . . . . .	12.0	16.0 - 28.0
Till-clay, gray, gravelly . . . . .	25.0	28.0 - 53.0
Till-clay, brown, silty, gravelly . . . . .	4.0	53.0 - 57.0
Till-clay, gray, gravelly . . . . .	2.0	57.0 - 59.0
Till-clay, gray, sandy, gravelly . . . . .	16.0	59.0 - 75.0
Sand and gravel, gray . . . . .	11.0	75.0 - 86.0
Till-clay, gray, gravelly . . . . .	5.0	86.0 - 91.0
Sand and gravel, gray . . . . .	6.0	91.0 - 97.0
Till-clay, gray, gravelly with boulders . . . . .	12.0	97.0 - 109.0
Sand and gravel, gray with boulders . . . . .	10.0	109.0 - 119.0
Dolomite, light gray . . . . .	6.0	119.0 - 125.0
		Total depth 125.0

DRILLING RECORD FOR DUP 40N10E-19.6f



Location of test:

N 3450 ft, W 3750 ft from SE cor. of sec. 19,  
 49 ft N of the center line of Army Trail Road,  
 148 ft W of a farmhouse, Wheaton Quadrangle,  
 1954

Surface elevation: 793 ft (West  
 Chicago Quadrangle, 1962)  
 Date started: 9-3-70  
 Date completed: 9-4-70  
 Drilling method: Hydraulic rotary,  
 split spoon  
 Pit size: 4.0 by 4.0 ft

Stem and jar weight and stroke: 300  
 lbs, 27 in.  
 Drill fluid loss zone:  
 125.0-132.0 ft  
 Density: 9.1 lb/gal  
 Loss: 99 gal (10 in.)

DESCRIPTION OF MATERIALS

Description	Thickness (ft)	Depth (ft)
Topsoil, black . . . . .	2.5	0.0 - 2.5
Till-clay, brown, sandy . . . . .	5.5	2.5 - 8.0
Till-clay, gray, silty, gravelly . . . . .	39.0	8.0 - 47.0
Sand, gray, fine to medium . . . . .	2.0	47.0 - 49.0
Till-clay, gray, sandy, gravelly . . . . .	21.5	49.0 - 70.5
Till-clay, greenish gray, silty, gravelly, soft . .	24.5	70.5 - 95.0
Sand, brown, silty, gravelly . . . . .	3.0	95.0 - 98.0
Silt, brown, gray, sandy . . . . .	5.0	98.0 - 103.0
Silt, gray, sandy . . . . .	11.0	103.0 - 114.0
Sand, gray, fine to medium, gravelly . . . . .	3.0	114.0 - 117.0
Sand, gray, fine, gravelly, clayey . . . . .	2.0	117.0 - 119.0
Till-clay, gray, silty, sandy . . . . .	6.0	119.0 - 125.0
Sand, gravel, and cobbles, gray . . . . .	7.0	125.0 - 132.0
Boulder, granite-like . . . . .	1.5	132.0 - 133.5
Sand, gravel, gray, yellow, and brown . . . . .	8.5	133.5 - 142.0
Dolomite, light gray, yellow . . . . .	5.0	142.0 - 147.0
		Total depth 147.0

DUP 40N10E-19.6f - Continued

SIEVE ANALYSES OF ROTARY SAMPLES

Sample depth (ft)	Tyler screen number											
	4	9	16	24	32	42	60	80	115	170	Pan	
125.0-	*A. 0.6	27.9	39.2	11.2	7.7	3.9	2.3	1.4	0.8	0.9	4.1	
130.0	B. 0.6	28.5	67.7	78.9	86.6	90.5	92.8	94.2	95.0	95.9	100.0	

\*A = percentage retained on sieve. B = cumulative percentage retained on sieve.

SPLIT-SPOON SAMPLES

Sample	Depth (ft)	Recovery (in.)	Blows/6-inch hammer drop	N value	Moisture content (%)
1	5.0 - 6.5	17	-- -- --	5	29.1
2	10.0 - 11.5	18	-- -- --	18	--
3	15.0 - 16.5	17	-- -- --	19	20.8
4	20.0 - 21.5	18	6- 6- 6	12	--
5	50.0 - 51.5	16	6-12-17	29	18.7
6	60.0 - 61.5	15	11-29-38	67	--
7	65.0 - 66.5	18	20-26-28	54	15.7
8	70.0 - 71.5	18	6-10-12	22	--
9	75.0 - 76.5	17	8-16-22	38	14.1
10	80.0 - 81.5	18	11-18-26	44	--
11	85.0 - 86.5	17	8-16-26	42	18.6
12	90.0 - 91.5	18	10-19-22	41	--
13	95.0 - 96.5	11	40-45-30	75	--
14	100.0 - 101.5	14	30-35-75	105	12.1
15	105.0 - 106.5	17	24-60-65	125	14.8
16	110.0 - 111.5	18	55-85-90	175	12.0
17	115.0 - 116.5	11	20-60-85	145	--
18	120.0 - 121.5	14	10-22-18	40	9.4
19	125.0 - 125.75	8	140-130 (8 in. total drop)	--	--
20	135.0 - 136.5	8	18-30-36	66	--

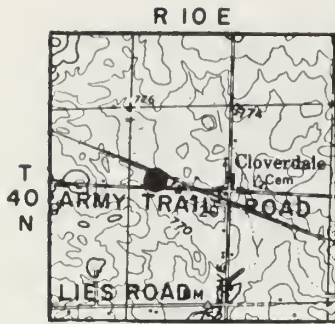


DUP 40N10E-19.6f - Concluded

SIEVE AND HYDROMETER ANALYSES OF SPLIT-SPOON SAMPLES (in percent)

Sample	> 2.0 mm (gravel)	< 2.0 mm (sand and finer)	Distribution of portion < 2.0 mm		
			> .062 mm (sand)	> .004 mm (silt)	< .004 mm (clay)
1	0	100	2	62	36
2	4	96	9	35	56
3	2	98	3	53	44
4	0	100	1	54	45
5	0	100	3	45	52
6	4	96	9	42	49
7	1	99	10	27	63
8	2	98	5	40	55
9	4	96	9	46	45
10	4	96	10	48	42
11	1	99	4	49	47
12	1	99	9	41	50
13	22	78	7	47	46
14	24	76	8	48	44
15	0	100	6	76	18
16	24	76	25	66	9
17	29	71	54	36	10
18	13	87	34	49	17

DRILLING RECORD FOR DUP 40N10E-20.8e1



Location of test:

N 3200 ft, W 4750 ft from SE cor. of sec. 20,  
 36 ft N of center line of Army Trail Road,  
 100 ft W of intermittent stream, Wheaton Quad-  
 rangle, 1954

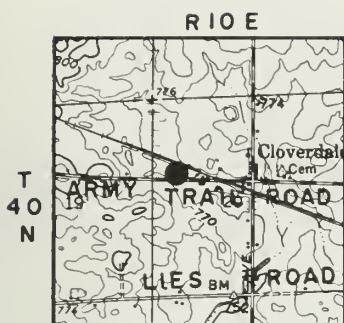
Surface elevation: 765 ft (West  
 Chicago Quadrangle, 1962)  
 Date started: 8-18-70  
 Date completed: 8-19-70

Drilling method: Hydraulic rotary  
 Pit size: 7.5 by 5.5 ft  
 Drill fluid loss: None  
 Remarks: Converted to an observa-  
 tion well 8-19-70

DESCRIPTION OF MATERIALS

Description	Thickness (ft)	Depth (ft)
Topsoil, black . . . . .	1.0	0.0 - 1.0
Till-clay, brown, gravelly . . . . .	1.0	1.0 - 2.0
Till-clay, brown, silty, gravelly . . . . .	6.0	2.0 - 8.0
Till-clay, gray, silty, gravelly . . . . .	4.0	8.0 - 12.0
Till-clay, gray, sandy, gravelly . . . . .	41.0	12.0 - 53.0
Sand and gravel, gray . . . . .	13.0	53.0 - 66.0
Till-clay, gray, sandy, gravelly . . . . .	7.0	66.0 - 73.0
Till-clay, gray, very gravelly . . . . .	5.0	73.0 - 78.0
Sand, gravel, and boulders, gray . . . . .	8.0	78.0 - 86.0
Till-clay, gray, sandy; fine gravel . . . . .	4.0	86.0 - 90.0
Sand, gravel, and boulders, gray . . . . .	3.0	90.0 - 93.0
Sand, gray . . . . .	5.0	93.0 - 98.0
Sand, gravel, and boulders, gray . . . . .	14.0	98.0 - 112.0
Clay, gray . . . . .	1.0	112.0 - 113.0
Sand, gravel, gray . . . . .	14.0	113.0 - 127.0
Till-clay, gray, sandy, gravelly . . . . .	6.0	127.0 - 133.0
Dolomite, light gray . . . . .	7.0	133.0 - 140.0
		Total depth 140.0

DRILLING RECORD FOR DUP 40N10E-20.8e2



Location of test:

N 3200 ft, W 5000 ft from SE cor. of sec. 20,  
35 ft N of center line of Army Trail Road,  
250 ft W of DUP 40N10E-20.8e1, Wheaton Quad-  
rangle, 1954

Surface elevation: 765 ft (West  
Chicago Quadrangle, 1962)  
Date started: 8-30-70  
Date completed: 8-31-70

Drilling method: Hydraulic rotary  
Pit size: 7.5 by 5.5 ft  
Drill fluid loss: None  
Remarks: Converted to an observa-  
tion well 8-31-70

DESCRIPTION OF MATERIALS

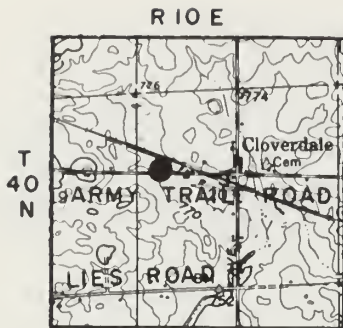
Description	Thickness (ft)	Depth (ft)
Topsoil, black . . . . .	1.0	0.0 - 1.0
Clay, brown, silty . . . . .	10.0	1.0 - 11.0
Till-clay, gray, silty, gravelly . . . . .	9.0	11.0 - 20.0
Till-clay, gray, sandy, gravelly . . . . .	16.5	20.0 - 36.5
Sand; fine to medium gravel, gray; coarse gravel . .	9.0	36.5 - 45.5
Till-clay, gray, sandy, gravelly . . . . .	30.5	45.5 - 76.0
Sand, gravel, gray and white . . . . .	8.0	76.0 - 84.0
Clay, gray, sandy . . . . .	1.5	84.0 - 85.5
Sand and gravel, gray, white . . . . .	33.5	85.5 - 119.0
Till-clay, gray, silty . . . . .	1.5	119.0 - 120.5
Sand and gravel, gray, white . . . . .	5.5	120.5 - 126.0
Till-clay, gray, sandy . . . . .	7.0	126.0 - 133.0
Dolomite, light gray . . . . .	4.0	133.0 - 137.0
		Total depth 137.0

SIEVE ANALYSES OF ROTARY SAMPLES

Sample depth (ft)	Tyler screen number											
	4	9	16	24	32	42	60	80	115	170	Pan	
85.0-90.0	*A.	9.0	29.7	15.2	6.1	11.6	14.2	5.3	1.8	1.3	1.3	4.5
	B.	9.0	38.7	53.9	60.0	71.6	85.8	91.1	92.9	94.2	95.5	100.0
95.0-100.0	A.	42.0	29.6	15.8	3.7	2.9	1.9	0.9	0.4	0.3	0.3	2.2
	B.	42.0	71.6	87.4	91.1	94.0	95.9	96.8	97.2	97.5	97.8	100.0

\*A = percentage retained on sieve. B = cumulative percentage retained on sieve.

DRILLING RECORD FOR DUP 40N10E-20.7e3



Location of test:

N 3200 ft, W 4600 ft from SE cor. of sec. 20, 39 ft N of center line of Army Trail Road, 150 ft E of DUP 40N10E-20.8e1, Wheaton Quadrangle, 1954

Surface elevation: 765 ft (West Chicago Quadrangle, 1962)

Date started: 9-5-70

Date completed: 9-8-70

Drilling method: Hydraulic rotary, split spoon

Hammer weight: 140 lb.

Hammer drop: 30 in.

Electric log interval: 0-128.0 ft

Pit size: 7.5 by 5.5 ft

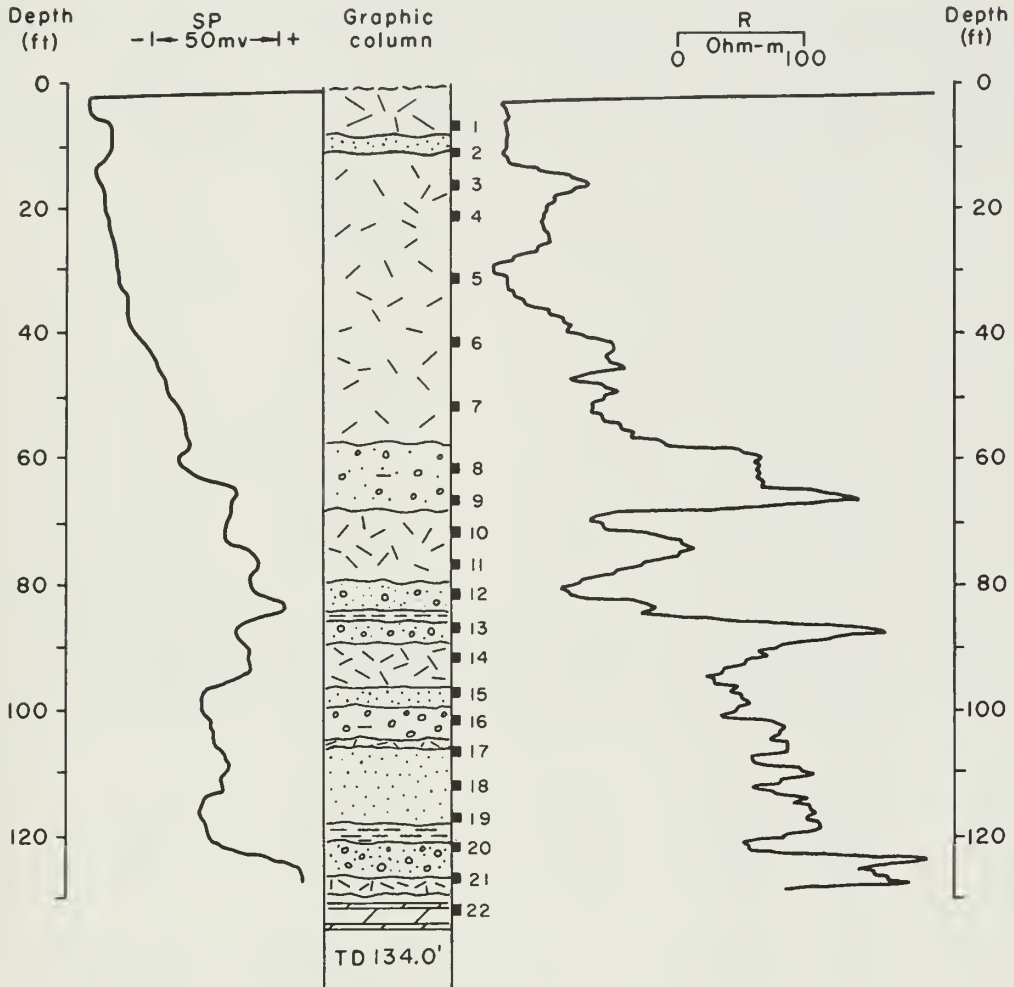
Drill fluid density before logging: 9.5 lb/gal

Drill fluid loss: None

DESCRIPTION OF MATERIALS

Description	Thickness (ft)	Depth (ft)
Topsoil, black . . . . .	1.0	0.0 - 1.0
Till-clay, brown, sandy . . . . .	7.0	1.0 - 8.0
Sand, gray . . . . .	2.5	8.0 - 10.5
Till-clay, gray, gravelly, sandy . . . . .	46.5	10.5 - 57.0
Sand, gravel, and silt, gray . . . . .	11.0	57.0 - 68.0
Till-clay, gray, gravelly . . . . .	11.5	68.0 - 79.5
Sand and gravel, gray . . . . .	4.5	79.5 - 84.0
Silt, brown . . . . .	1.5	84.0 - 85.5
Sand and gravel, brown . . . . .	3.5	85.5 - 89.0
Till-clay, gray, gravelly, sandy . . . . .	7.0	89.0 - 96.0
Sand, gray, very fine . . . . .	3.0	96.0 - 99.0
Gravel, gray, silty . . . . .	6.5	99.0 - 105.5
Till-clay, gray, gravelly . . . . .	1.0	105.5 - 106.5
Sand, gray, fine . . . . .	11.5	106.5 - 118.0
Silt, gray . . . . .	3.0	118.0 - 121.0
Sand and gravel, gray . . . . .	5.0	121.0 - 126.0
Till-clay, gray, sandy . . . . .	3.5	126.0 - 129.5
Dolomite, light gray, yellow . . . . .	4.5	129.5 - 134.0
		Total depth 134.0

DUP 40N10E-20.7e3 - Continued



SIEVE ANALYSES OF ROTARY SAMPLES

Sample depth (ft)	Tyler screen number											
		4	9	16	24	32	42	60	80	115	170	Pan
60.0-65.0	*A.	22.0	33.0	20.2	8.6	9.4	4.0	1.2	0.4	0.1	0.1	1.0
	B.	22.0	55.0	75.2	83.8	93.2	97.2	98.4	98.8	98.9	99.0	100.0
100.0-105.0	A.	3.1	27.9	24.3	10.5	10.3	5.9	4.5	2.6	1.6	1.5	7.8
	B.	3.1	31.0	55.3	65.8	76.1	82.0	86.5	89.1	90.7	92.2	100.0
110.0-115.0	A.	4.5	17.6	12.2	18.1	15.8	10.0	7.5	4.2	3.9	2.5	3.7
	B.	4.5	22.1	34.3	52.4	68.2	78.2	85.7	89.9	93.8	96.3	100.0

\*A = percentage retained on sieve. B = cumulative percentage retained on sieve.

DUP 40N10E-20.7e3 - Continued

SPLIT-SPOON SAMPLES

Sample	Depth (ft)	Recovery (in.)	Blows/6-inch hammer drop	N value	Moisture content (%)
1	5.0 - 6.5	10	2- 6- 9	15	21.7
2	10.0 - 11.5	12	4- 4-12	26	19.7
3	15.0 - 16.5	15	4- 6- 9	15	19.4
4	20.0 - 21.5	12	6- 9-16	25	20.5
5	30.0 - 31.5	20	4- 6-10	16	19.7
6	40.0 - 41.5	16	5- 5-10	15	17.8
7	50.0 - 51.5	20	4- 5- 8	13	20.2
8	60.0 - 61.5	12	20-28-47	75	--
9	65.0 - 66.5	12	34-30-38	68	--
10	70.0 - 71.5	1	-- -- --	--	--
11	75.0 - 76.5	5	32-29-43	72	15.4
12	80.0 - 81.5	18	24-53-34	87	--
13	85.0 - 85.8	10	24-171- (4-in. total drop)		15.9
14	90.0 - 91.5	18	49-17-160	177	--
15	95.0 - 95.5	4	100- (6-in. total drop)		--
16	100.0 - 101.5	10	16-86-64	150	--
17	105.0 - 106.5	4	19-21-34	54	--
18	110.0 - 111.5	18	15-12-19	31	--
19	115.0 - 116.5	14	12-32-29	61	--
20	120.0 - 121.5	18	12-21-25	46	18.9
21	125.0 - 126.5	18	19-43-32	75	--
22	130.0 - 130.8	6	49-130 (4-in. total drop)		--

SIEVE ANALYSES OF SPLIT-SPOON SAMPLES

Sample no. and depth (ft)	Tyler screen number											
	4	9	16	24	32	42	60	80	115	170	Pan	
<sup>18</sup> 110.0- 111.5	*A.	10.4	9.8	6.3	5.7	4.4	6.0	7.0	6.3	9.2	11.4	23.5
	B.	10.4	20.2	26.5	32.2	36.6	42.6	49.6	55.9	65.1	76.5	100.0
<sup>19</sup> 115.0- 116.5	A.	0.4	2.7	2.0	1.1	1.2	4.3	8.9	11.7	12.9	9.5	45.3
	B.	0.4	3.1	5.1	6.2	7.4	11.7	20.6	32.3	45.2	54.7	100.0

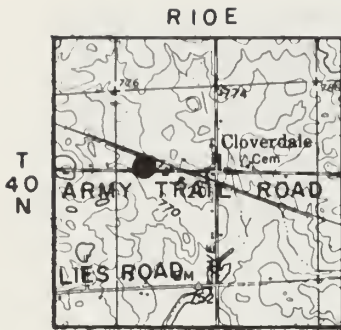
\*A = percentage retained on sieve. B = cumulative percentage retained on sieve.

DUP 40N10E-20.7e3 - Concluded

SIEVE AND HYDROMETER ANALYSES OF SPLIT-SPOON SAMPLES (in percent)

Sample	> 2.0 mm (gravel)	< 2.0 mm (sand and finer)	Distribution of portion < 2.0 mm		
			> .062 mm (sand)	> .004 mm (silt)	< .004 mm (clay)
1	25	75	7	35	58
2	0	100	2	35	63
3	25	75	2	49	49
4	1	99	2	48	50
5	3	97	3	52	45
6	2	98	4	63	33
7	5	95	2	47	51
11	5	95	11	52	37
13	19	81	39	51	10
17	4	96	7	44	49
18	0	100	75	24	1
19	0	100	26	71	3
20	0	100	5	89	6
21	9	91	17	48	35

DRILLING RECORD FOR DUP 40N10E-20.7e4



Location of test:

N 3200 ft, W 4500 ft from SE cor. of sec. 20,  
40 ft N of the center line of Army Trail Road,  
250 ft E of DUP 40N10E-20.8e1, Wheaton Quad-  
rangle, 1954

Surface elevation: 765 ft (West  
Chicago Quadrangle, 1962)

Date started: 9-2-70

Date completed: 9-4-70

Drilling method: Hydraulic rotary

Pit size: 7.5 by 5.5 ft

Drill fluid loss zones:

87.0-98.0 ft

Density: not reported

Loss: 309 gal (6 in.)

113.0-116.0 ft

Density: Not reported

Loss: 155 gal (3 in.)

Remarks: Converted to an observation well 9-4-70

DESCRIPTION OF MATERIALS

Description	Thickness (ft)	Depth (ft)
Topsoil, black . . . . .	1.0	0.0 - 1.0
Clay, brown, silty . . . . .	8.0	1.0 - 9.0
Till-clay, gray, silty, gravelly . . . . .	9.0	9.0 - 18.0
Till-clay, gray, sandy, with small sand seams . .	69.0	18.0 - 87.0
Sand and gravel, gray and white . . . . .	11.0	87.0 - 98.0
Silt, gray, clayey . . . . .	15.0	98.0 - 113.0
Sand and gravel, gray and white . . . . .	3.0	113.0 - 116.0
Till-silt, gray, clayey, gravelly . . . . .	12.5	116.0 - 128.5
Boulder . . . . .	1.0	128.5 - 129.5
Till, clay, gray, sandy . . . . .	0.5	129.5 - 130.0
Dolomite, light gray; shale, green . . . . .	5.0	130.0 - 135.0
		Total depth 135.0

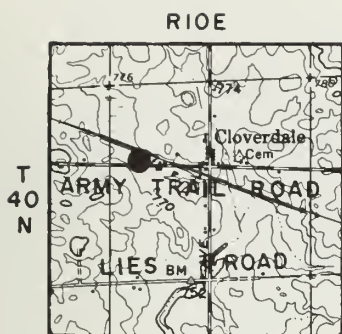
SIEVE ANALYSES OF ROTARY SAMPLES

Sample depth (ft)	Tyler screen number										
	4	9	16	24	32	42	60	80	115	170	Pan
90.0-	*A. 31.0	44.6	10.4	3.5	0.7	0.7	0.9	0.9	1.2	1.0	5.1
95.0	B. 31.0	75.6	86.0	89.5	90.2	90.9	91.8	92.7	93.9	94.9	100.0

\*A = percentage retained on sieve. B = cumulative percentage retained on sieve.



DRILLING RECORD FOR DUP 40N10E-20.8e5



Location of test:

N 3200 ft, W 4900 ft from SE cor. of sec. 20,  
32 ft N of the center line of Army Trail Road,  
150 ft W of DUP 40N10E-20.8e1, Wheaton Quad-  
rangle, 1954

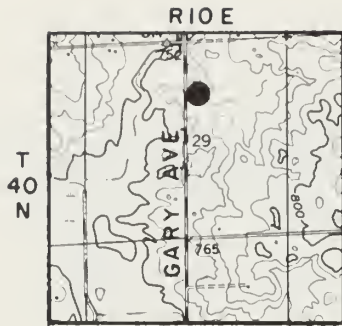
Surface elevation: 765 ft (West  
Chicago Quadrangle, 1962)  
Date started: 9-10-70  
Date completed: 9-11-70  
Drilling method: Hydraulic rotary  
Pit size: 7.5 by 5.5 ft  
Drill fluid loss: None

Remarks: Converted to a test  
well 9-12-70. Casing: 8 in.  
from surface to 106.0 ft;  
8 in. screen from 106.0 to  
126.0 ft. Reported to pump  
40 gpm for 1.5 hr with 70 ft  
of drawdown from a static  
level 35.0 ft below land  
surface.

DESCRIPTION OF MATERIALS

Description	Thickness (ft)	Depth (ft)
Topsoil, black . . . . .	1.0	0.0 - 1.0
Clay, brown, silty . . . . .	10.0	1.0 - 11.0
Till-clay, gray, silty, gravelly . . . . .	9.0	11.0 - 20.0
Till-clay, gray, sandy, gravelly . . . . .	16.5	20.0 - 36.5
Sand, fine; gravel, medium to coarse . . . . .	9.0	36.5 - 45.5
Till-clay, gray, sandy, gravelly . . . . .	48.5	45.5 - 94.0
Sand, fine to coarse; gravel, white, gray . . . . .	4.0	94.0 - 98.0
Silt, gray . . . . .	5.0	98.0 - 103.0
Sand, white, gray, fine; boulders . . . . .	3.0	103.0 - 106.0
Sand, gray, fine . . . . .	12.0	106.0 - 118.0
Silt, gray . . . . .	4.0	118.0 - 122.0
Sand and gravel, gray, white . . . . .	4.0	122.0 - 126.0
Till-clay, gray, sandy . . . . .	7.0	126.0 - 133.0
Dolomite, light gray . . . . .	1.0	133.0 - 134.0
		Total depth 134.0

DRILLING RECORD FOR DUP 40N10E-29.4f



Location of test:

N 3850 ft, W 2650 ft from SE cor. of sec. 29,  
26 ft E of the center line of Gary Avenue,  
1400 ft S of the center line of Lies Road,  
Wheaton Quadrangle, 1954

Surface elevation: 763 ft (Lombard  
Quadrangle, 1962)  
Date started: 9-7-70  
Date completed: 9-9-70  
Drilling method: Hydraulic rotary,  
split spoon

Hammer weight: 140 lb  
Hammer drop: 30 in.  
Pit size: 12.0 by 2.5 ft  
Drill fluid loss: None

DESCRIPTION OF MATERIALS

Description	Thickness (ft)	Depth (ft)
Topsoil, black . . . . .	1.0	0.0 - 1.0
Till-clay, dark gray, brown, silty . . . . .	1.5	1.0 - 2.5
Till-clay, brown, gray, silty . . . . .	7.0	2.5 - 9.5
Till-clay, gray, silty with sand seams . . . . .	50.0	9.5 - 60.0
Boulder . . . . .	1.0	60.0 - 61.0
Sand, gravel, gray and white . . . . .	4.0	61.0 - 65.0
Silt, gray, clayey . . . . .	2.0	65.0 - 67.0
Sand and gravel, gray, white; small clay layers . .	6.0	67.0 - 73.0
Till-clay, gray, sandy, gravelly; small sand seams.	16.0	73.0 - 89.0
Sand and gravel, gray, white, coarse . . . . .	3.5	89.0 - 92.5
Dolomite, light gray, broken . . . . .	1.5	92.5 - 94.0
Dolomite, light gray . . . . .	6.0	94.0 - 100.0
		Total depth 100.0

SIEVE ANALYSES OF ROTARY SAMPLES

Sample depth (ft)	Tyler screen number										
	4	9	16	24	32	42	60	80	115	170	Pan
60.0-	*A. 42.6	32.3	10.0	5.0	2.9	1.8	1.2	0.8	0.7	0.4	2.2
65.0	B. 42.6	74.9	85.0	90.0	92.9	94.7	95.9	96.7	97.4	97.8	100.0

\*A = percentage retained on sieve. B = cumulative percentage retained on sieve.

DUP 40N10E-29.4f - Concluded

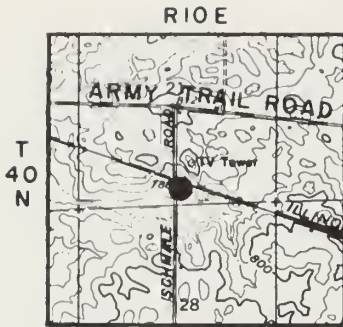
SPLIT-SPOON SAMPLES

Sample	Depth (ft)	Recovery (in.)	Blows/6-inch hammer drop	N value	Moisture content (%)
1	5.0 - 6.5	15	1- 3- 5	8	36.2
2	10.0 - 11.5	17	3- 6- 7	13	15.9
3	15.0 - 16.5	13	3-10- 18	28	18.9
4	20.0 - 21.5	13	5-14- 18	32	27.0
5	30.0 - 31.5	14	7-12- 9	21	18.5
6	40.0 - 41.5	16	6- 7- 12	19	17.9
7	50.0 - 51.5	16	19-12- 17	29	11.5
8	60.0 - 60.5	none	100- (5-in. total drop)		--
9	65.0 - 66.5	8	15-46- 59	105	17.5
10	70.0 - 71.5	17	29-46- 48	94	--
11	75.0 - 76.5	17	45-75-133	208	12.3
12	80.5 - 81.5	17	30-55- 36	91	9.5
13	85.0 - 86.5	15	30-45- 47	92	8.0
14	90.0 - 90.8	none	85-100- (2-in. total drop)		--

SIEVE AND HYDROMETER ANALYSES OF SPLIT-SPOON SAMPLES (in percent)

Sample	> 2.0 mm (gravel)	< 2.0 mm (sand and finer)	Distribution of portion < 2.0 mm		
			> .062 mm (sand)	> .004 mm (silt)	< .004 mm (clay)
1	2	98	6	50	44
2	2	98	30	39	31
3	4	96	8	44	48
4	2	98	7	37	56
5	7	93	17	48	35
6	1	99	9	53	38
7	5	95	10	47	43
9	10	90	18	69	13
10	8	92	26	62	12
11 upper 13 in.	6	94	19	53	28
lower 4 in.	0	100	12	72	16
12	14	86	24	50	26
13	14	86	23	50	27

DRILLING RECORD FOR DUP 40N10E-21.4a1



Location of test:

N 200 ft, W 2600 ft from SE cor. of sec. 21,  
65 ft E of the center line of Schmale Road,  
275 ft N of an intermittent stream, Wheaton  
Quadrangle, 1954

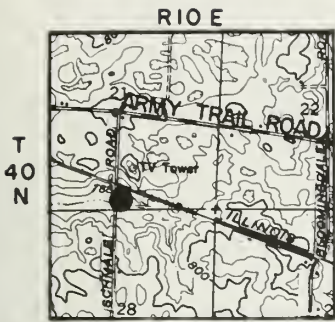
Surface elevation: 756 ft (Lombard  
Quadrangle, 1962)  
Date started: 8-24-70  
Date completed: 8-26-70

Drilling method: Hydraulic rotary  
Pit size: 6.0 by 5.0 ft  
Drill fluid loss: None

DESCRIPTION OF MATERIALS

Description	Thickness (ft)	Depth (ft)
Topsoil, black . . . . .	1.5	0.0 - 1.5
Till-clay, brown, sandy . . . . .	1.5	1.5 - 3.0
Till-clay, brown, silty, gravelly; boulder at 6 ft . . . . .	6.0	3.0 - 9.0
Till-clay, gray, silty, gravelly, soft . . . . .	13.0	9.0 - 22.0
Till-clay, gray, sandy, gravelly; boulder at 34 ft . . . . .	16.0	22.0 - 38.0
Till-clay, brown, silty, sandy, gravelly . . . . .	5.0	38.0 - 43.0
Till-clay, gray, silty, gravelly, firm . . . . .	8.0	43.0 - 51.0
Till-clay, brownish gray, sandy, gravelly . . . . .	3.0	51.0 - 54.0
Till-clay, gray, sandy, gravelly . . . . .	3.0	54.0 - 57.0
Till-clay, brown, sandy, gravelly . . . . .	4.0	57.0 - 61.0
Sand and gravel, brown . . . . .	3.0	61.0 - 64.0
Till-clay, gray, very gravelly . . . . .	12.0	64.0 - 76.0
Gravel, gray . . . . .	3.0	76.0 - 79.0
Till-clay, gray; layers of gravel . . . . .	9.0	79.0 - 88.0
Sand and gravel, grayish brown . . . . .	13.0	88.0 - 101.0
Till-clay, gray, sandy, gravelly . . . . .	11.0	101.0 - 112.0
Gravel and boulders, light gray . . . . .	12.0	112.0 - 124.0
Dolomite, light gray . . . . .	4.0	124.0 - 128.0
		Total depth 128.0

DRILLING RECORD FOR DUP 40N10E-21.4a2



Location of test:

N 200 ft, W 2550 ft from SE cor. of sec. 21, 225 ft N of intermittent stream 60 ft E of the center line of Schmale Road, 50 ft SE of DUP 40N10E-21.4a1, Wheaton Quadrangle, 1954

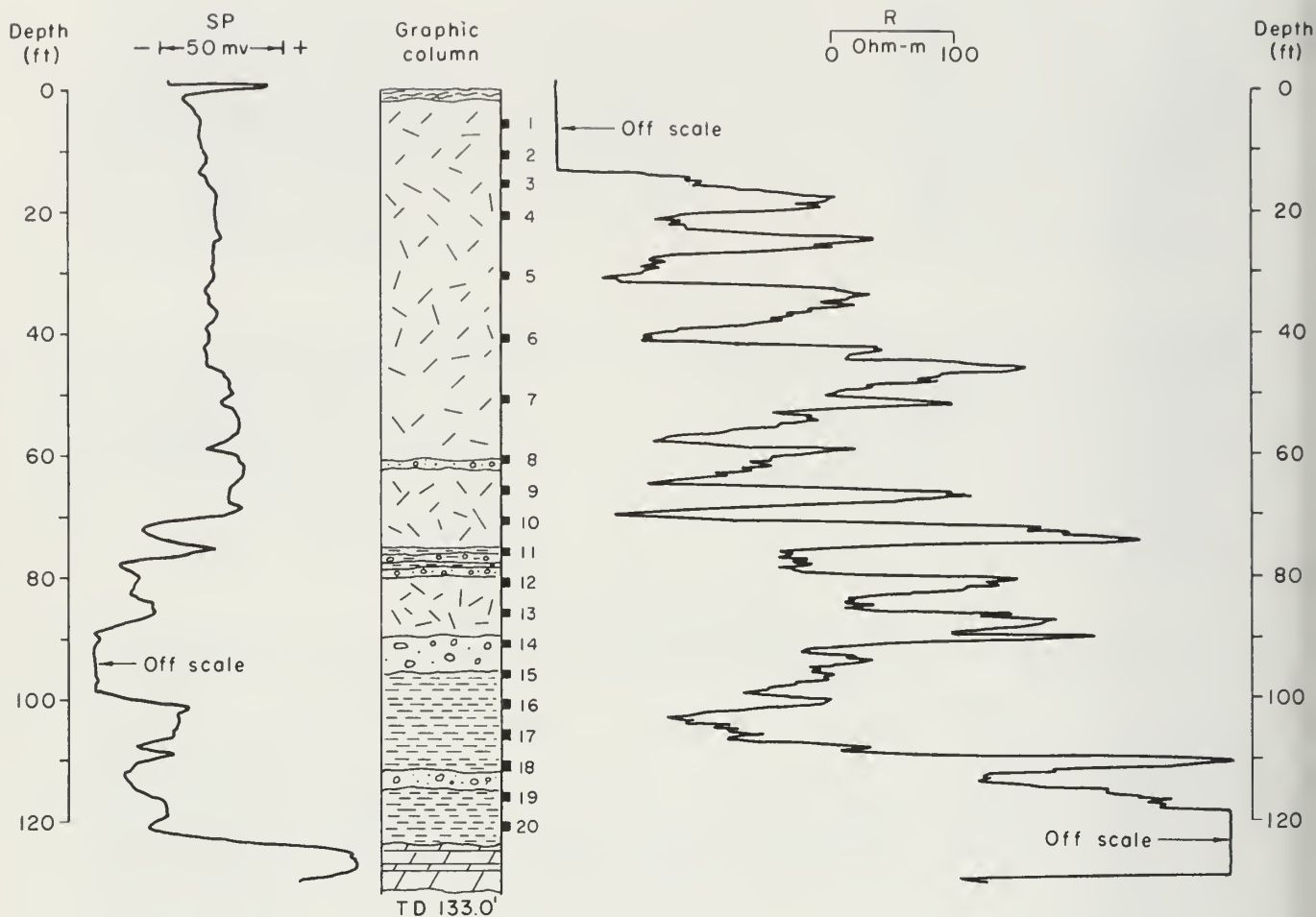
Surface elevation: 763 ft (Lombard Quadrangle, 1962)  
 Date started: 9-10-70  
 Date completed: 9-14-70  
 Drilling method: Hydraulic rotary, split spoon  
 Hammer weight: 140 lb

Hammer drop: 30 in.  
 Electric log interval: 0-131.0 ft  
 Pit size: 12.0 by 2.5 ft  
 Drill fluid density before logging: 9.5 lb/gal  
 Drill fluid loss: None

DESCRIPTION OF MATERIALS

Description	Thickness (ft)	Depth (ft)
Topsoil, black . . . . .	1.5	0.0 - 1.5
Till-clay, brown, silty, gravelly . . . . .	6.0	1.5 - 7.5
Till-clay, gray, silty, gravelly . . . . .	6.5	7.5 - 14.0
Till-clay, gray, sandy, gravelly; gravel seams . . .	14.0	14.0 - 28.0
Till-clay, gray, silty, gravelly; small sand seams . . . . .	33.0	28.0 - 61.0
Sand, gray, silty; gravel . . . . .	1.5	61.0 - 62.5
Till-clay, silty, gravelly . . . . .	10.5	62.5 - 73.0
Sand and gravel, gray . . . . .	1.5	73.0 - 74.5
Clay, gray . . . . .	0.5	74.5 - 75.0
Sand and gravel, gray . . . . .	2.0	75.0 - 77.0
Clay, gray . . . . .	1.5	77.0 - 78.5
Sand and gravel, gray . . . . .	1.5	78.5 - 80.0
Till-silt, clayey, gravelly . . . . .	9.5	80.0 - 89.5
Sand and gravel, gray . . . . .	6.0	89.5 - 95.5
Silt, gray, sandy; small sand seams . . . . .	12.5	95.5 - 108.0
Silt, gray, sandy, very gravelly . . . . .	5.0	108.0 - 113.0
Sand and gravel, gray . . . . .	1.5	113.0 - 114.5
Silt, gray, clayey, very gravelly . . . . .	10.0	114.5 - 124.5
Dolomite, light gray, light brown; shale, light green, dark red . . . . .	8.5	124.5 - 133.0
		Total depth 133.0

DUP 40N10E-21.4a2 - Continued



SIEVE ANALYSES OF ROTARY SAMPLES

Sample depth (ft)	Tyler screen number											
	4	9	16	24	32	42	60	80	115	170	Pan	
90.0-	*A.	0.0	0.3	0.1	3.0	6.3	15.1	17.8	15.4	14.5	9.5	18.0
91.5	B.	0.0	0.3	0.4	3.4	9.7	24.8	42.6	58.0	72.5	82.0	100.0

\*A = percentage retained on sieve. B = cumulative percentage retained on sieve.

DUP 40N10E-21.4a2 - Concluded

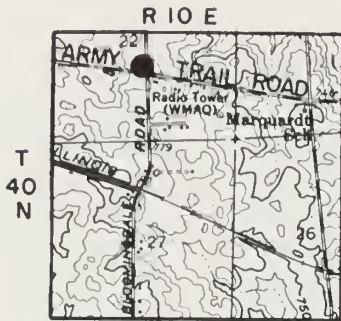
SPLIT-SPOON SAMPLES

Sample	Depth (ft)	Recovery (in.)	Blows/6-inch hammer drop	N value	Moisture content (%)
1	5.0 - 6.5	16	4- 8-12	20	17.3
2	10.0 - 11.5	16	1- 6-13	19	21.7
3	15.0 - 16.5	10	4- 5-10	15	11.0
4	20.0 - 21.5	8	8-12-17	29	--
5	30.0 - 31.5	12	20-20-30	50	18.6
6	40.0 - 41.5	16	30-33-36	69	6.2
7	50.0 - 51.5	6	20-23-27	50	--
8	60.0 - 61.5	6	45-80-35	115	11.0
9	65.0 - 66.5	17	22-22-30	52	24.1
10	70.0 - 71.5	18	24-35-40	75	16.2
11	75.0 - 76.5	9	40-60-50	110	9.0
12	80.0 - 81.5	6	36-53-41	94	13.8
13	85.0 - 86.5	10	30-22-23	43	10.0
14	90.0 - 91.5	12	50-43-55	48	10.4
15	95.0 - 95.5	6	100- (6-in. total drop)		--
16	100.0 - 101.5	12	30-73-85	158	11.3
17	105.0 - 106.5	none	28-32-28	60	--
18	110.0 - 111.5	12	83-111 (6-in. total drop)		9.6
19	115.0 - 116.5	7	30-132-115	247	9.2
20	120.0 - 121.5	15	73-113-93	206	7.4

SIEVE AND HYDROMETER ANALYSES OF SPLIT-SPOON SAMPLES (in percent)

Sample	> 2.0 mm (gravel)	< 2.0 mm (sand and finer)	Distribution of portion < 2.0 mm		
			> .062 mm (sand)	> .004 mm (silt)	< .004 mm (clay)
1	2	98	6	44	50
2	5	95	4	40	56
3	16	84	22	58	20
4	5	95	15	48	37
5	5	95	10	38	52
6	4	96	18	54	28
7	19	81	18	48	34
8	13	87	39	46	15
9	0	100	2	37	61
10	0	100	0	76	24
11	38	62	20	56	24
12	15	85	8	75	17
13	6	94	22	59	19
14	52	48	62	4	34
16	0	100	12	85	3
18	24	76	31	55	14
19	25	75	31	62	7
20	27	73	54	36	10

DRILLING RECORD FOR DUP 40N10E-22.4c



Location of test:

N 1925 ft, W 2500 ft from SE cor. of sec. 22,  
 195 ft N of center line of Army Trail Road,  
 220 ft W of the center line of Bloomingdale  
 Road, Wheaton Quadrangle, 1954

Surface elevation: 771 ft (Lombard  
 Quadrangle, 1962)  
 Date started: 8-20-70  
 Date completed: 8-22-70  
 Drilling method: Hydraulic rotary

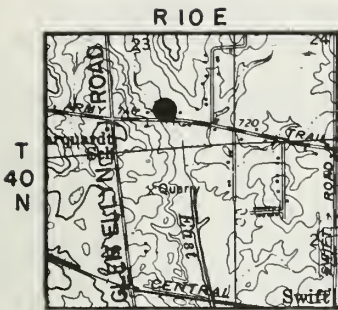
Pit size: 6.0 by 4.0 ft  
 Drill fluid loss zone:  
 81.0-101.0 ft  
 Density: Not reported  
 Loss: 269 gal (18 in.)

DESCRIPTION OF MATERIALS

Description	Thickness (ft)	Depth (ft)
Topsoil, black . . . . .	1.0	0.0 - 1.0
Till-clay, brown, sandy . . . . .	5.0	1.0 - 6.0
Till-clay, brown, silty, sandy . . . . .	3.0	6.0 - 9.0
Till-clay, dark brown, silty . . . . .	1.5	9.0 - 10.5
Till-clay, gray; gravel; boulders at 19.5 ft . . . . .	30.5	10.5 - 41.0
Till-clay, brownish gray, silty; gravel . . . . .	22.0	41.0 - 63.0
Gravel, gray . . . . .	2.5	63.0 - 65.5
Till-clay, gray, sandy, very gravelly . . . . .	15.5	65.5 - 81.0
Sand, gravel, and boulders, gray . . . . .	20.0	81.0 - 101.0
Till-clay, gray, very gravelly; boulders . . . . .	5.0	101.0 - 106.0
Dolomite, light gray . . . . .	14.0	106.0 - 120.0
Total depth		120.0



DRILLING RECORD FOR DUP 40N10E-23.3c1



Location of test:

N 850 ft, W 1850 ft from SE cor. of sec. 23,  
 80 ft N of the center line of Army Trail Road,  
 130 ft W of the center of the East Branch of  
 the Du Page River, Wheaton Quadrangle, 1954

Surface elevation: 710 ft (Lombard  
 Quadrangle, 1962)  
 Date started: 8-27-70  
 Date completed: 8-28-70  
 Drilling method: Hydraulic rotary,  
 split spoon

Hammer weight: 140 lb  
 Hammer drop: 30 in.  
 Pit size: 6.0 by 5.0 ft  
 Drill fluid loss: None

DESCRIPTION OF MATERIALS

Description	Thickness (ft)	Depth (ft)
Topsoil, black . . . . .	1.5	0.0 - 1.5
Organic matter, brown, gray; wood; peat . . . . .	1.0	1.5 - 2.5
Till-clay, brownish gray, sandy, gravelly . . . . .	1.5	2.5 - 4.0
Sand and gravel, gray . . . . .	7.0	4.0 - 11.0
Silt, gray, sandy . . . . .	3.0	11.0 - 14.0
Gravel, boulders, and sand, gray . . . . .	3.0	14.0 - 17.0
Clay, brown . . . . .	2.0	17.0 - 19.0
Till-clay, gray, silty, gravelly; boulders . . . . .	8.0	19.0 - 27.0
Silt, gray, gravelly, sandy . . . . .	18.0	27.0 - 45.0
		Total depth 45.0

DUP 40N10E-23.3c1 - Concluded

SPLIT-SPOON SAMPLES

Sample	Depth (ft)	Recovery (in.)	Blows/6-inch hammer drop	N value	Moisture content (%)
1	5.0 - 6.5	13	1- 2-31	33	--
2	10.0 - 11.5	18	3- 2- 4	6	19.9
3	15.0 - 16.5	15	18-48-36	84	--
4	20.0 - 21.5	7	8-10-16	26	8.3
5	25.0 - 26.5	6	40-80-100	180	11.6
6	30.0 - 31.5	--	Refusal	--	--
7	40.0 - 41.5	8	49-111-116	227	--

SIEVE AND HYDROMETER ANALYSES OF SPLIT-SPOON SAMPLES (in percent)

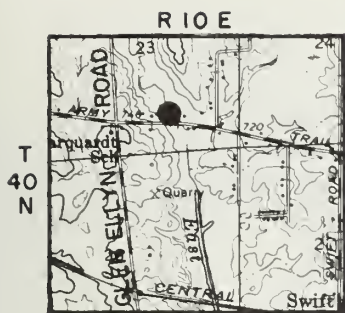
Sample	> 2.0 mm (gravel)	< 2.0 mm (sand and finer)	Distribution of portion < 2.0 mm		
			> .062 mm (sand)	> .004 mm (silt)	< .004 mm (clay)
1	7	93	45	32	23
2	4	96	54	28	18
3	15	85	61	27	12
4	37	63	21	54	25
5	9	91	21	60	19
7	15	85	21	60	19

SIEVE ANALYSES OF ROTARY SAMPLES

Sample depth (ft)	Tyler screen number											
	4	9	16	24	32	42	60	80	115	170	Pan	
10.0-	*A.	28.5	27.5	16.4	11.0	4.4	3.9	3.0	1.6	0.8	0.7	2.2
15.0	B.	28.5	56.0	72.4	83.4	87.8	91.7	94.7	96.3	97.1	97.8	100.0

\*A = percentage retained on sieve. B = cumulative percentage retained on sieve.

DRILLING RECORD FOR DUP 40N10E-23.3c2

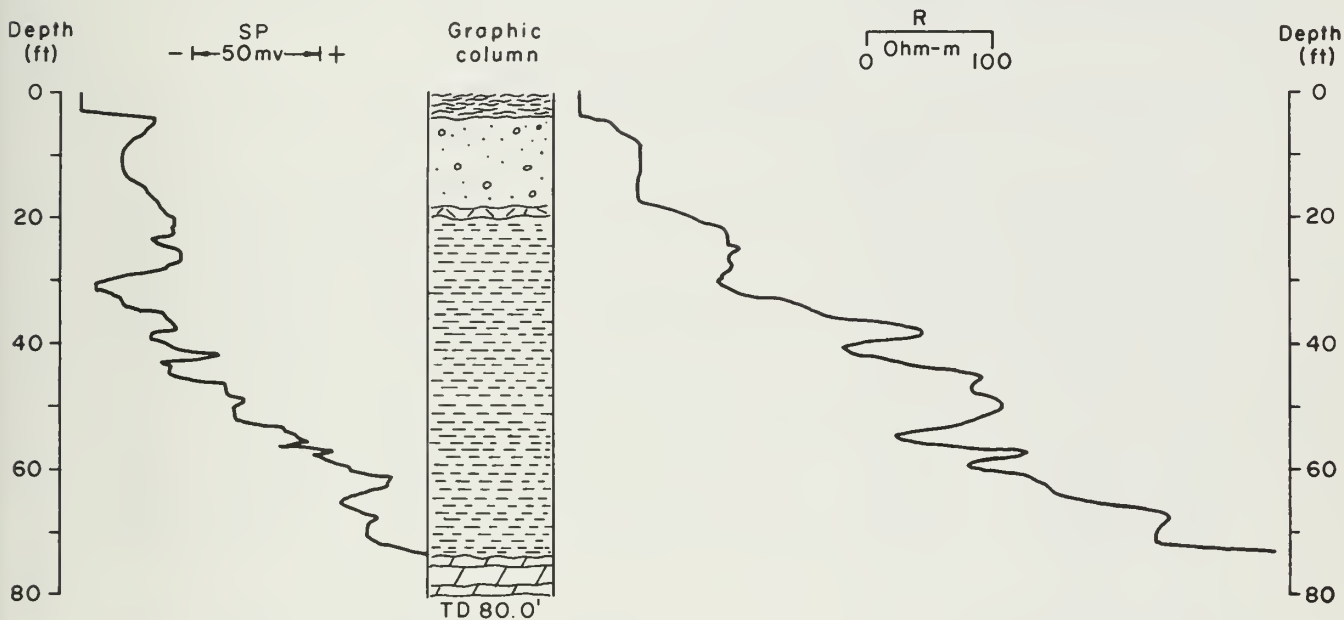


Location of test:

N 850 ft, W 1800 ft from SE cor. of sec. 23,  
 72 ft N of the center line of Army Trail Road,  
 72 ft W of the center of culvert over the East  
 Branch of the Du Page River, 50 ft E of DUP  
 40N10E-23.3c1, Wheaton Quadrangle, 1954

Surface elevation: 710 ft  
 (Lombard Quadrangle, 1962)  
 Date started: 9-9-70  
 Date completed: 9-10-70

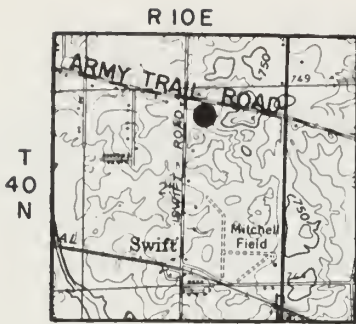
Drilling method: Hydraulic rotary  
 Pit size: 12.0 by 2.5 ft  
 Drill fluid density before logging:  
 9.5 lb/gal  
 Drill fluid loss: None



DESCRIPTION OF MATERIALS

Description	Thickness (ft)	Depth (ft)
Topsoil, black . . . . .	1.0	0.0 - 1.0
Silt, gray, sandy; brown organic material . . . . .	3.5	1.0 - 4.5
Sand and gravel, dark gray, trace of white gravel . . . . .	14.0	4.5 - 18.5
Till-clay, gray, sandy . . . . .	1.5	18.5 - 20.0
Silt, gray, clayey; sand seams . . . . .	24.0	20.0 - 44.0
Silt, light gray, clayey, very gravelly . . . . .	30.0	44.0 - 74.0
Dolomite, light gray . . . . .	6.0	74.0 - 80.0
		Total depth 80.0

DRILLING RECORD FOR DUP 40N10E-25.4h



Location of test:

N 4950 ft, W 2300 ft from SE cor. of sec. 25,  
 31 ft N of the center line of Army Trail Road,  
 510 ft E of the center line of Swift Road,  
 Wheaton Quadrangle, 1954

Surface elevation: 731 ft (Lombard  
 Quadrangle, 1962)  
 Date started: 8-25-70  
 Date completed: 8-26-70  
 Drilling method: Hydraulic rotary

Pit size: 6.0 by 5.0 ft  
 Drill fluid loss zone:  
 83.0-95.5 ft  
 Density: Not reported  
 Loss: 74 gal (4 in.)

DESCRIPTION OF MATERIALS

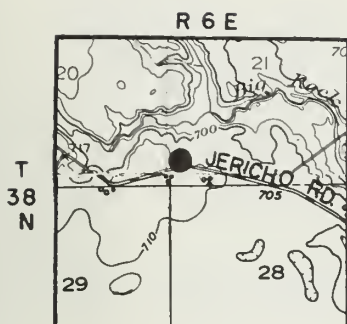
Description	Thickness (ft)	Depth (ft)
Topsoil, black . . . . .	2.0	0.0 - 2.0
Till-clay, brown, gray, silty . . . . .	6.0	2.0 - 8.0
Till-clay, gray, sandy . . . . .	5.0	8.0 - 13.0
Till-clay, brownish gray, very gravelly . . . . .	4.0	13.0 - 17.0
Till-clay, gray, gravelly . . . . .	24.0	17.0 - 41.0
Till-clay, brownish gray, gravelly . . . . .	10.0	41.0 - 51.0
Gravel, gray . . . . .	2.0	51.0 - 53.0
Till-clay, gray, sandy, gravelly . . . . .	23.0	53.0 - 76.0
Gravel, gray . . . . .	2.0	76.0 - 78.0
Till-clay, gray, sandy, gravelly . . . . .	5.0	78.0 - 83.0
Sand, gravel, gray . . . . .	12.5	83.0 - 95.5
Dolomite, light gray . . . . .	3.5	95.5 - 99.0
Total depth 99.0		

SIEVE ANALYSES OF ROTARY SAMPLES

Sample depth (ft)	Tyler screen number										
	4	9	16	24	32	42	60	80	115	170	Pan
85.0-	*A. 1.3	25.9	23.2	13.4	6.1	7.8	7.9	5.8	3.9	1.9	2.8
90.0	B. 1.3	27.2	50.4	63.8	69.9	77.7	85.6	91.4	95.3	97.2	100.0

\*A = percentage retained on sieve. B = cumulative percentage retained on sieve.

DRILLING RECORD FOR KNE 38N6E-21.8a



Location of test:

N 550 ft, W 4650 ft from SE cor. of sec. 21,  
 26 ft N of the center line of Jericho Road,  
 870 ft NE of a brick farmhouse, Sycamore  
 Quadrangle, 1937

Surface elevation: 710 ft  
 Date started: 8-28-70  
 Date completed: 8-28-70

Drilling method: Hydraulic rotary  
 Pit size: 9.0 by 2.0 ft  
 Drill fluid loss: None

DESCRIPTION OF MATERIALS

Description	Thickness (ft)	Depth (ft)
Clay, dark brown, silty . . . . .	0.5	0.0 - 0.5
Till-clay, light brown, silty; gravel . . . . .	7.5	0.5 - 8.0
Till-clay, reddish brown, gravelly, sandy . . . . .	11.0	8.0 - 19.0
Clay, gray, sandy . . . . .	2.0	19.0 - 21.0
Sand, brown, fine . . . . .	5.0	21.0 - 26.0
Sand, fine; gravel, gray . . . . .	9.0	26.0 - 35.0
Clay, gray, silty . . . . .	5.0	35.0 - 40.0
Sand, gray, fine . . . . .	9.0	40.0 - 49.0
Silt, gray, clayey . . . . .	4.0	49.0 - 53.0
Till-clay, gray, sandy . . . . .	8.5	53.0 - 61.5
Sand, fine; gravel, gray . . . . .	11.5	61.5 - 73.0
Clay, gray, sandy . . . . .	1.0	73.0 - 74.0
Sand, fine; gravel, gray . . . . .	1.5	74.0 - 75.5
Clay, gray, sandy . . . . .	1.0	75.5 - 76.5
Sand, gray, fine; trace of gravel . . . . .	4.5	76.5 - 81.0
Clay, gray, silty . . . . .	7.0	81.0 - 88.0
Till-clay, gray, sandy; small sand and gravel seams . . . . .	23.0	88.0 - 111.0
Sand and gravel, brown, tight . . . . .	3.0	111.0 - 114.0
Till-clay, gray, sandy, gravelly, hard . . . . .	15.5	114.0 - 129.5
Dolomite, light gray, light brown . . . . .	5.5	129.5 - 135.0
		Total depth 135.0

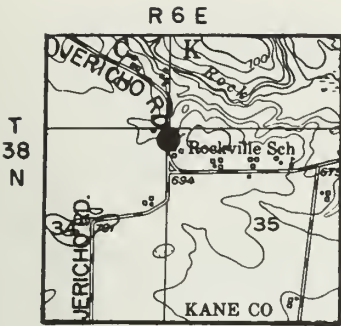
KNE 38N6E-21.8a - Concluded

SIEVE ANALYSES OF ROTARY SAMPLES

Sample depth (ft)	Tyler screen number										
	4	9	16	24	32	42	60	80	115	170	Pan
20.0-	*A. 3.8	14.6	5.7	2.0	4.4	8.4	15.3	13.9	8.9	8.6	14.3
25.0	B. 3.8	18.5	24.2	26.2	30.6	39.0	54.3	68.2	77.1	85.7	100.0
30.0-	A. 0.3	2.1	3.2	4.5	12.4	25.7	28.7	12.9	4.5	2.5	3.2
35.0	B. 0.3	2.4	5.6	10.1	22.5	48.2	76.9	89.8	94.3	96.8	100.0
40.0-	A. 0.0	0.3	0.6	2.7	8.6	21.8	27.4	16.1	7.0	8.5	7.0
45.0	B. 0.0	0.3	0.9	3.6	12.2	34.0	61.4	77.5	84.5	93.0	100.0
65.0-	A. 2.3	8.5	10.5	6.1	11.1	14.0	15.2	9.9	5.6	7.4	9.4
70.0	B. 2.3	10.8	21.3	27.4	38.5	52.5	67.7	77.6	83.2	90.6	100.0

\*A = percentage retained on sieve. B = cumulative percentage retained on sieve.

DRILLING RECORD FOR KNE 38N6E-35.8h



Location of test:

N 5255 ft, W 4930 ft from SE cor. of sec. 35,  
 318 ft N of intersection of Jones and Jericho  
 Roads, 22 ft E of Jericho Road, Sandwich Quad-  
 angle, 1950

Surface elevation: 690 ft  
 Date started: 8-27-70  
 Date completed: 8-27-70

Drilling method: Hydraulic rotary  
 Pit size: 9.0 by 2.0 ft  
 Drill fluid loss: None

DESCRIPTION OF MATERIALS

Description	Thickness (ft)	Depth (ft)
Topsoil, black . . . . .	1.0	0.0 - 1.0
Clay, brown, silty . . . . .	5.0	1.0 - 6.0
Till-clay, brown, sandy . . . . .	9.5	6.0 - 15.5
Till-clay, gray, sandy . . . . .	3.0	15.5 - 18.5
Sand, fine; gravel, medium gray . . . . .	5.5	18.5 - 24.0
Till-clay, sandy . . . . .	3.0	24.0 - 27.0
Sand, gray, fine . . . . .	6.0	27.0 - 33.0
Till, gray, sandy . . . . .	4.0	33.0 - 37.0
Sand, gray, fine . . . . .	1.0	37.0 - 38.0
Till-clay, gray, sandy . . . . .	13.0	38.0 - 51.0
Sand and gravel, gray . . . . .	5.0	51.0 - 56.0
Till-clay, gray, sandy, gravelly . . . . .	6.0	56.0 - 62.0
Sand and gravel, gray . . . . .	5.0	62.0 - 67.0
Till-clay, gray, sandy, gravelly . . . . .	11.0	67.0 - 78.0
Till-clay, gray, brown, silty . . . . .	7.5	78.0 - 85.5
Dolomite, light gray . . . . .	4.5	85.5 - 90.0
		Total depth 90.0

KNE 38N6E-35.8h - Concluded

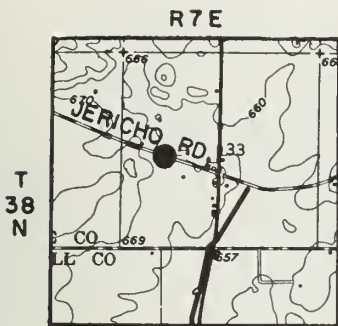
SIEVE ANALYSES OF ROTARY SAMPLES

Sample depth (ft)	Tyler screen number											
	4	9	16	24	32	42	60	80	115	170	Pan	
20.0-	*A.	3.8	16.5	18.2	4.5	4.8	6.3	9.8	9.7	7.1	6.6	12.7
25.0	B.	3.8	20.3	38.5	43.0	47.8	54.1	63.9	73.6	80.7	87.3	100.0
50.0-	A.	67.7	24.0	4.1	0.5	0.3	0.3	0.5	0.4	0.2	0.3	1.7
55.0	B.	67.7	91.7	95.8	96.3	96.6	96.9	97.4	97.8	98.0	98.3	100.0

\*A = percentage retained on sieve. B = cumulative percentage retained on sieve.



DRILLING RECORD FOR KNE 38N7E-33.7d1



Location of test:

N 2550 ft, W 4100 ft from SE cor. of sec. 33,  
26 ft N of center line of Jericho Road, 675  
ft SE of a frame farmhouse, Yorkville Quad-  
rangle, 1954

Surface elevation: 660 ft  
Date started: 8-24-70  
Date completed: 8-25-70  
Drilling method: Hydraulic rotary  
Pit size: 8.0 by 4.0 ft  
Drill fluid loss zone:  
35.0-79.5 ft  
Density: 10.0 lb/gal  
Loss: 2400 gal (120 in.)

Remarks: Converted to a test well  
9-6-70. Casing: 8 in. from sur-  
face to 55 ft; 8-in. screen from  
55 to 75 ft. Reported to pump  
421 gpm for 24 hr with 12.0 ft of  
drawdown from a static level of  
9.0 ft below land surface

DESCRIPTION OF MATERIALS

Description	Thickness (ft)	Depth (ft)
Topsoil, black . . . . .	1.0	0.0 - 1.0
Till-clay, dark brown, silty . . . . .	2.5	1.0 - 3.5
Till-clay, light brown, silty . . . . .	2.5	3.5 - 6.0
Till-clay, brown, sandy . . . . .	2.0	6.0 - 8.0
Sand and gravel, brown . . . . .	9.0	8.0 - 17.0
Sand and gravel, gray . . . . .	6.0	17.0 - 23.0
Silt, gray, clayey . . . . .	4.0	23.0 - 27.0
Sand and gravel, gray . . . . .	8.0	27.0 - 35.0
Sand and gravel, brown . . . . .	44.5	35.0 - 79.5
Dolomite, light gray; shale, light green . . . . .	5.5	79.5 - 85.0
		Total depth 85.0

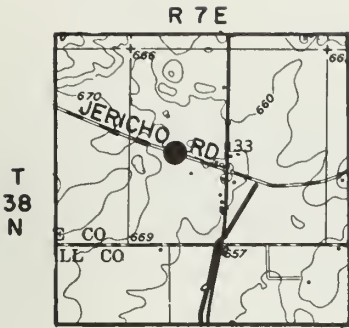
KNE 38N7E-33.7d1 - Concluded

SIEVE ANALYSES OF ROTARY SAMPLES

Sample depth (ft)	Tyler screen number											
	4	9	16	24	32	42	60	80	115	170	Pan	
15.0-	*A.	3.7	14.0	20.9	11.5	15.4	16.1	12.4	4.3	1.1	0.2	0.4
20.0	B.	3.7	17.7	38.6	50.1	65.5	81.6	94.0	98.3	99.4	99.6	100
20.0-	A.	1.0	32.3	19.3	8.1	11.5	12.0	9.2	3.3	1.0	1.0	1.3
25.0	B.	1.0	33.3	52.6	60.7	72.2	84.2	93.4	96.7	97.7	98.7	100
25.0-	A.	1.2	33.0	17.5	7.5	10.1	9.5	10.4	6.3	2.6	1.0	0.9
30.0	B.	1.2	34.2	51.7	59.2	69.3	78.8	89.2	95.5	98.1	99.1	100
30.0-	A.	0.3	14.0	15.5	10.2	13.6	12.8	14.5	10.2	4.6	2.6	1.7
35.0	B.	0.3	14.3	29.8	40.0	53.6	66.4	80.9	91.1	95.7	98.3	100
35.0-	A.	1.0	12.9	22.0	9.4	11.9	13.9	11.6	12.1	2.8	1.3	1.1
40.0	B.	1.0	13.9	35.9	45.3	57.2	71.1	82.7	94.8	97.6	98.9	100
40.0-	A.	26.9	26.0	15.3	6.0	7.7	8.0	5.9	2.2	1.0	0.5	0.5
45.0	B.	26.9	52.9	68.2	74.2	81.9	89.9	95.8	98.0	99.0	99.5	100
45.0-	A.	4.8	18.3	17.8	8.7	12.2	15.5	12.3	5.3	2.4	1.4	1.3
50.0	B.	4.8	23.1	40.9	49.6	61.8	77.3	89.6	94.9	97.3	98.7	100
50.0-	A.	25.3	24.3	13.2	5.8	8.8	10.9	7.8	2.4	0.7	0.3	0.5
55.0	B.	25.3	49.6	62.8	68.6	77.4	88.3	96.1	98.5	99.2	99.5	100
60.0-	A.	23.6	29.8	18.5	7.4	9.3	6.7	3.5	0.6	0.3	0.2	0.1
65.0	B.	23.6	53.4	71.9	79.3	88.6	95.3	98.8	99.4	99.7	99.9	100
65.0-	A.	18.9	35.0	18.7	7.5	8.7	6.3	3.1	0.8	0.2	0.1	0.7
70.0	B.	18.9	53.9	72.6	80.1	88.8	95.1	98.2	99.0	99.2	99.3	100
70.0-	A.	36.7	20.7	15.1	6.4	8.5	7.0	4.2	0.9	0.2	0.1	0.2
75.0	B.	36.7	57.4	72.5	78.9	87.4	94.4	98.6	99.5	99.7	99.8	100
75.0-	A.	34.3	23.4	17.8	7.7	7.2	5.4	3.5	0.1	0.2	0.2	0.2
79.5	B.	34.3	57.7	75.5	83.2	90.4	95.8	99.3	99.4	99.6	99.8	100

\*A = percentage retained on sieve. B = cumulative percentage retained on sieve.

DRILLING RECORD FOR KNE 38N7E-33.7d2

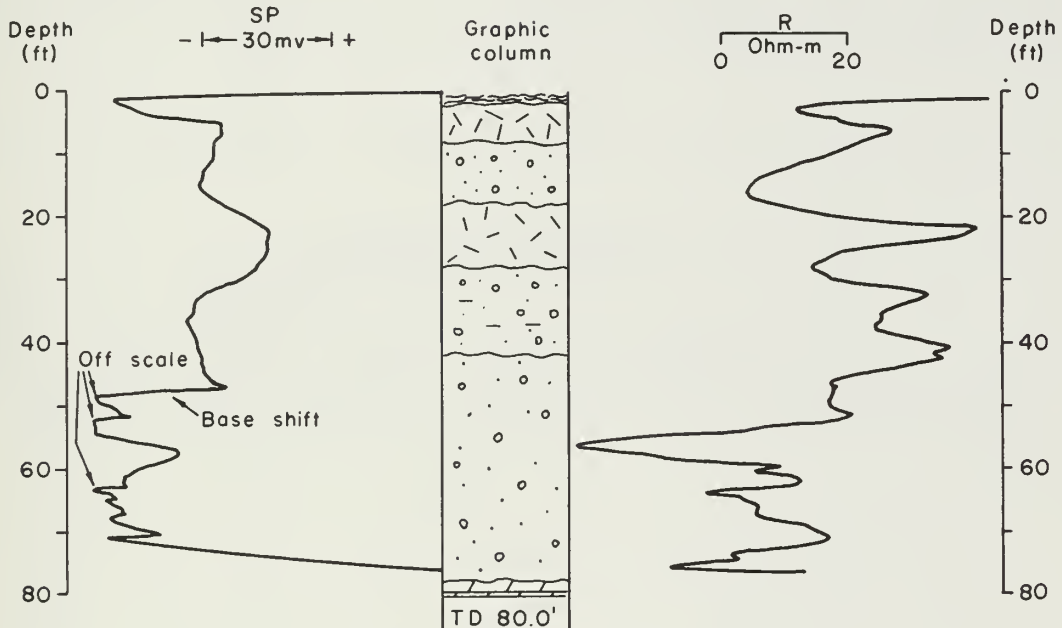


Location of test:

N 2550 ft, W 4200 ft from SE cor. of sec. 33,  
26 ft N of the center line of Jericho Road,  
575 ft SE of a frame farmhouse, Yorkville Quad-  
rangle, 1954

Surface elevation: 660 ft  
Date started: 9-24-70  
Date completed: 10-1-70

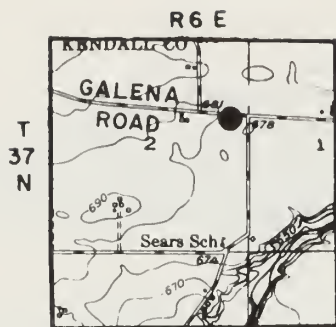
Drilling method: Hydraulic rotary  
Electric log interval: 0-76.0 ft  
Pit size: 8.0 by 4.0 ft  
Drill fluid loss: Not reported  
Remarks: Converted to an observation well



DESCRIPTION OF MATERIALS

Description	Thickness (ft)	Depth (ft)
Topsoil, black . . . . .	2.0	0.0 - 2.0
Till-clay, brown, silty . . . . .	4.0	2.0 - 6.0
Till-clay, brown, sandy . . . . .	2.0	6.0 - 8.0
Sand and gravel, brown . . . . .	9.0	8.0 - 17.0
Sand and gravel, gray, coarse . . . . .	1.0	17.0 - 18.0
Till-clay, brown, sandy . . . . .	4.0	18.0 - 22.0
Till-clay, gray, gravelly . . . . .	6.0	22.0 - 28.0
Sand, gray, fine to coarse, clayey and gravelly . .	14.0	28.0 - 42.0
Sand, gray, fine to coarse; gravel, gray . . . . .	36.0	42.0 - 78.0
Dolomite, light gray . . . . .	2.0	78.0 - 80.0
Total depth		80.0

DRILLING RECORD FOR KEN 37N6E-2.2f



Location of test:

N 3650 ft, W 625 ft from SE cor. of sec. 2,  
600 ft W of the intersection of Galena and  
Rock Creek Roads, 43 ft S of the center line  
of Galena Road, Sandwich Quadrangle, 1950

Surface elevation: 678 ft  
Date started: 8-26-70  
Date completed: 8-27-70  
Drilling method: Hydraulic rotary  
Pit size: 9.0 by 2.0 ft

Drill fluid loss zone:  
35.0-55.5 ft  
Density: 10.0 lb/gal  
Loss: 404 gal (36 in.)

DESCRIPTION OF MATERIALS

Description	Thickness (ft)	Depth (ft)
Topsoil, dark brown . . . . .	1.0	0.0 - 1.0
Silt, brown, clayey . . . . .	15.0	1.0 - 16.0
Sand, fine; gravel, coarse, brown . . . . .	39.5	16.0 - 55.5
Till-clay, gray, sandy . . . . .	7.5	55.5 - 63.0
Sand, fine; gravel, coarse, gray . . . . .	3.0	63.0 - 66.0
Till-clay, light gray, sandy, gravelly . . . . .	50.0	66.0 - 116.0
Shale, light green; dolomite, light gray . . . . .	5.0	116.0 - 121.0
		Total depth 121.0

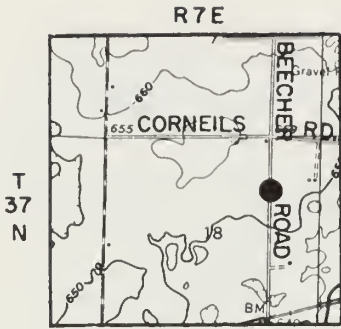
KEN 37N6E-2.2f - Concluded

SIEVE ANALYSES OF ROTARY SAMPLES

Sample depth (ft)	Tyler screen number											
	4	9	16	24	32	42	60	80	115	170	Pan	
15.0-	*A.	0.6	9.9	17.6	16.0	25.1	15.7	6.6	2.5	1.5	1.4	3.1
20.0	B.	0.6	10.5	28.1	44.1	69.2	84.9	91.5	94.0	95.5	96.9	100.0
20.0-	A.	16.0	34.7	10.3	3.0	4.1	5.7	9.0	8.0	4.3	2.3	2.6
25.0	B.	16.0	50.7	61.0	64.0	68.1	73.8	82.8	90.8	95.1	97.4	100.0
25.0-	A.	10.5	25.7	16.7	6.1	6.3	6.9	8.9	7.3	4.2	3.5	3.9
30.0	B.	10.5	36.2	52.9	59.0	65.3	72.2	81.1	88.4	92.6	96.1	100.0
30.0-	A.	2.6	11.8	9.9	4.2	6.2	7.7	14.3	16.9	10.5	9.3	6.6
35.0	B.	2.6	14.4	24.3	28.5	34.7	42.4	56.7	73.6	84.1	93.4	100.0
35.0-	A.	9.4	8.8	8.8	5.0	8.6	12.5	19.2	14.5	7.1	3.8	2.3
40.0	B.	9.4	18.2	27.0	32.0	40.6	53.1	72.3	86.8	93.9	97.7	100.0
40.0-	A.	25.0	5.8	2.4	2.2	5.3	8.5	15.3	14.3	7.6	6.7	6.9
45.0	B.	25.0	30.8	33.2	35.4	40.7	49.2	64.5	78.8	86.4	93.1	100.0
45.0-	A.	9.6	12.4	10.6	5.7	9.2	9.4	13.4	12.1	7.6	5.3	4.7
50.0	B.	9.6	22.0	32.6	38.3	47.5	56.9	70.3	82.4	90.0	95.3	100.0
50.0-	A.	1.4	4.4	9.2	5.1	10.1	12.4	18.8	16.8	9.4	6.8	5.6
55.0	B.	1.4	5.8	15.0	20.1	30.2	42.6	61.4	78.2	87.6	94.4	100.0

\*A = percentage retained on sieve. B = cumulative percentage retained on sieve.

DRILLING RECORD FOR KEN 37N7E-18.3f



Location of test:

N 3800 ft, W 1450 ft from SE cor. of sec. 18, 1400 ft S of the intersection of Corneils and Beecher Roads; 18 ft W of the center line of Beecher Road, Yorkville Quadrangle, 1954

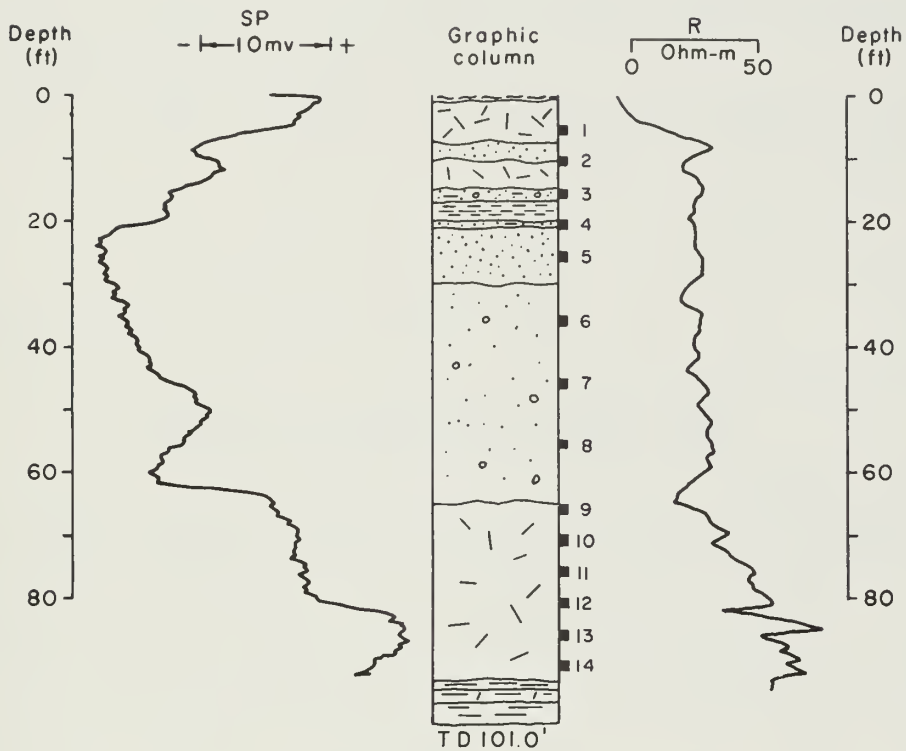
Surface elevation: 655 ft  
 Date started: 5-18-71  
 Date completed: 5-21-71  
 Drilling method: Hydraulic rotary, split spoon  
 Hammer weight: 140 lb.  
 Hammer drop: 30 in.  
 Electric log interval: 0-93 ft  
 Pit size: 12.0 by 2.5 ft  
 Drill fluid density before logging: 10.0 lb/gal

Drill fluid viscosity before logging: 63 sec/qt @ 59° F  
 Drill fluid loss zones:  
 21.0-30.0 ft  
 Density: 10.0 lb/gal  
 Loss: 79 gal (4 in.)  
 30.0-65.0 ft  
 Density: 10.0 lb/gal  
 Loss: 53 gal (20 in.)

DESCRIPTION OF MATERIALS

Description	Thickness (ft)	Depth (ft)
Topsoil, black . . . . .	1.0	0.0 - 1.0
Till-clay, brown (trace of gray), silty . .	6.5	1.0 - 7.5
Sand, brown, silty . . . . .	3.5	7.5 - 11.0
Till-clay, brown, silty, gravelly . . . . .	4.0	11.0 - 15.0
Sand, brown, silty; gravel . . . . .	2.0	15.0 - 17.0
Silt, gray, sandy, clayey . . . . .	3.0	17.0 - 20.0
Sand, gray . . . . .	1.0	20.0 - 21.0
sand, brown, loose . . . . .	9.0	21.0 - 30.0
Sand, brown; gravel, coarse . . . . .	35.0	30.0 - 65.0
Till, gray, sandy, gravelly; boulder at 90-91 ft . . . . .	28.0	65.0 - 93.0
Shale, gray; dolomite, brown . . . . .	8.0	93.0 - 101.0
Total depth		101.0

KEN 37N7E-18.3f - Continued



SPLIT-SPOON SAMPLES

Sample	Depth (ft)	Recovery (in.)	Blows/6-inch hammer drop	N value	Qp	Moisture content (%)
1	5.0 - 6.5	16	1- 2- 2	4	0.5	29.5
2	10.0 - 11.5	20	6-12-10	22	1.25	--
3	15.0 - 16.5	14	7-14-20	34	1.75	--
4	20.0 - 21.5	16	7-11-13	24	--	10.1
5	25.0 - 26.5	8	6- 8- 7	15	--	--
6	35.0 - 36.5	5	9-13-16	29	--	--
7	45.0 - 46.5	8	13-15-26	41	--	--
8	55.0 - 56.5	1	14-16-38	54	--	--
9	65.0 - 66.5	14	14-17-24	41	4.5+	19.4
10	70.0 - 71.5	13	22-12-16	28	2.0	10.9
11	75.0 - 75.5	9	35-100 (9 in. total drop)		2.5	10.0
12	80.0 - 81.5	18	80-100 --		4.5	--
13	85.0 - 85.25	3	100 (3 in. total drop)		4.5	--
14	90.0 - 90.16	2	100 (2 in. total drop)		--	--

KEN 37N7E-18.3f - Concluded

SIEVE AND HYDROMETER ANALYSES OF SPLIT-SPOON SAMPLES (in percent)

Sample	> 2.0 mm (gravel)	< 2.0 mm (sand and finer)	Distribution of portion < 2.0 mm		
			> .062 mm (sand)	>.004 mm (silt)	< .004 mm (clay)
1	0	100	4	47	49
4	6	94	46	37	17
9	0	100	1	51	48
10	12	88	28	40	32
11	11	89	34	42	24

SIEVE ANALYSES OF SPLIT-SPOON SAMPLES

Sample no. and depth (ft)	Tyler screen number											
	4	9	16	24	32	42	60	80	115	170	Pan	
5 25.0- 26.5	*A.	3.2	1.7	1.8	3.4	7.4	21.3	28.2	19.4	6.7	2.1	4.8
	B.	3.2	4.9	6.7	10.1	17.5	38.8	67.0	86.4	93.1	95.2	100.0
6 35.0- 36.5	A.	4.7	2.6	1.6	2.9	4.6	8.9	11.2	7.4	4.7	4.9	46.5
	B.	4.7	7.3	8.9	11.8	16.4	25.3	36.5	43.9	48.6	53.5	100.0
7 45.0- 46.5	A.	1.8	1.6	2.1	4.2	10.5	26.7	17.7	17.3	8.0	2.9	7.2
	B.	1.8	3.4	5.5	9.7	20.2	46.9	64.6	81.9	89.9	92.8	100.0

\*A = percentage retained on sieve. B = cumulative percentage retained on sieve.

SIEVE ANALYSES OF ROTARY SAMPLES

Sample depth (ft)	Tyler screen number											
	4	9	16	24	32	42	60	80	115	170	Pan	
25.0- 30.0	*A.	3.0	12.3	11.5	17.8	19.3	25.3	7.9	1.5	0.4	0.1	0.9
	B.	3.0	15.3	26.8	44.6	63.9	89.2	97.1	98.6	99.0	99.1	100.0
35.0- 40.0	A.	15.1	22.6	7.1	5.8	12.3	19.4	10.9	5.3	1.0	0.1	0.4
	B.	15.1	37.7	44.8	50.6	62.9	82.3	93.2	98.5	99.5	99.6	100.0
45.0- 50.0	A.	16.0	15.6	5.5	9.1	14.1	16.2	15.0	5.9	2.0	0.0	0.6
	B.	16.0	31.6	37.1	46.2	60.3	76.5	91.5	97.4	99.4	99.4	100.0
50.0- 55.0	A.	31.2	19.5	9.5	11.3	8.9	11.5	5.5	1.5	0.5	0.1	0.5
	B.	31.2	50.7	60.2	71.5	80.4	91.9	97.4	98.9	99.4	99.5	100.0
60.0- 65.0	A.	40.8	7.6	6.7	10.0	9.4	13.2	7.7	2.7	0.9	0.2	0.8
	B.	40.8	48.4	55.1	65.1	74.5	87.7	95.4	98.1	99.0	99.2	100.0

\*A = percentage retained on sieve. B = cumulative percentage retained on sieve.



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